

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A REMA objective for imaging an object plane onto an image plane, comprising: a condenser portion, an intermediate portion, and a ~~field lens portion~~ lens portion proximate the image plane in a region where an absolute ray height of an outermost chief ray exceeds an absolute ray height of a marginal ray at the lens surfaces, the lens portion proximate the image plane comprising a collecting lens and diverging lens, wherein said REMA objective has a total of no more than 10 lenses with a combined total of no more than five aspheric lens surfaces, each of said condenser portion, said intermediate portion and said a ~~field lens portion~~ lens portion proximate the image plane containing one to two aspheric lens surfaces.
2. (Original) The REMA objective according to claim 1, wherein said condenser portion comprises at least one concave surface that is curved toward said object plane.
3. (Original) The REMA objective according to claim 2, wherein for said concave surface the ratio of the radius of curvature to the lens diameter is smaller than 0.65.
4. (Canceled)
5. (Original) The REMA objective according to claim 1, having an image field diameter greater than 80 mm.
6. (Original) The REMA objective according to claim 1, having an image side numerical aperture greater than 0.10.

7. (Original) The REMA objective according to claim 1, wherein a light-conducting value of the REMA objective is defined as a multiplication product of image field diameter and image-side numerical aperture of the REMA objective, and wherein said light-conducting value of the REMA objective is greater than 10 mm.
8. (Original) The REMA objective according to claim 1, wherein an image of a bright/dark edge projected from the object plane onto the image plane has a transition zone where a 5 percent brightness level and a 95 percent brightness level are mutually separated by less than 2 percent of the image field diameter.
9. (Currently Amended) The REMA objective according to claim 1, wherein said lenses comprise a condenser portion, an intermediate portion, and a ~~a field lens portion~~ lens portion proximate the image plane, and wherein the condenser portion is configured as an anterior partial objective with a condenser-portion image plane that lies at infinity and with a diaphragm that lies in said object plane of the REMA objective.
10. (Currently Amended) The REMA objective according to claim 1, wherein the REMA objective reproduces a predetermined pupil function with values of the sine of the chief ray angle, $\sin(i)$ in the range of ± 10 mrad with deviations of less than ± 1 mrad.
11. (Currently Amended) The REMA objective according to claim 1, wherein said intermediate portion and said ~~a field lens portion~~ lens portion proximate the image plane are spaced from each other at a distance that is large enough for a deflecting

mirror to be arranged between said intermediate portion and said a field lens portion lens portion proximate the image plane.

12. (Currently Amended) A REMA objective for imaging an object plane onto an image plane, comprising: a condenser portion, an intermediate portion, and a a field lens portion lens portion proximate the image plane in a region where an absolute ray height of an outermost chief ray exceeds an absolute ray height of a marginal ray at the lens surfaces, the lens portion proximate the image plane comprising a collecting lens and a diverging lens, wherein said REMA objective has lenses with a total of no more than five aspheric lens surfaces, each of said condenser portion, said intermediate portion and said field lens portion lens portion proximate the image plane containing one to two aspheric lens surfaces, and wherein a glass path length through said lenses does not exceed 30 percent of a distance between said object plane and said image plane.
13. (Original) The REMA objective according to claim 12, wherein said condenser portion comprises at least one concave surface that is curved toward said object plane.
14. (Original) The REMA objective according to claim 12, wherein for said concave surface the ratio of the radius of curvature to the lens diameter is smaller than 0.65.
15. (Canceled)
16. (Original) The REMA objective according to claim 12, having an image field diameter greater than 80 mm.

17. (Original) The REMA objective according to claim 12, having an image side numerical aperture greater than 0.10.
18. (Original) The REMA objective according to claim 12, wherein a light-conducting value of the REMA objective is defined as a multiplication product of image field diameter and image-side numerical aperture of the REMA objective, and wherein said light-conducting value of the REMA objective is greater than 10 mm.
19. (Original) The REMA objective according to claim 12, comprising at least one optical surface for which the maximum amount of the sine of the angle of incidence of a marginal ray in air ($|\sin(i_{\text{edge}})|$) relative to the surface normal exceeds 0.6 times the numerical aperture (NAO) on the object side.
20. (Original) The REMA objective according to claim 12, wherein an image of a bright/dark edge projected from the object plane onto the image plane has a transition zone where a 5 percent brightness level and a 95 percent brightness level are mutually separated by less than 2 percent of the image field diameter.
21. (Canceled)
22. (Canceled)
23. (Canceled)
24. (Canceled)
25. (Canceled)
26. (Canceled)

27. (Canceled)

28. (Canceled)

29. (Canceled)

30. (Canceled)

31. (Canceled)

32. (Canceled)

33. (Canceled)

34. (Canceled)

35. (Canceled)

36. (Canceled)

37. (Canceled)

38. (Canceled)

39. (Canceled)

40. (Canceled)

41. (Canceled)

42. (Canceled)

43. (Canceled)

44. (Canceled)

45. (Canceled)

46. (Canceled)

47. (Canceled)

48. (Canceled)

49. (Canceled)

50. (Canceled)

51. (Canceled)

52. (Canceled)

53. (Canceled)

54. (Canceled)

55. (Canceled)

56. (Canceled)

57. (Canceled)

58. (Canceled)

59. (Canceled)

60. (Canceled)

61. (Canceled)

62. (Canceled)

63. (New) A REMA objective for imaging an object plane onto an image plane, comprising: an aperture stop in an aperture plane, a

condenser portion, an intermediate portion, and a lens portion proximate the image plane, wherein all portions are centrically arranged with respect to an optical axis of the REMA objective, and the lens portion proximate the image plane is arranged in a region along the optical axis in which for a selected position along the optical axis, an absolute distance of an outermost chief ray to the optical axis exceeds an absolute distance of the marginal ray to the optical axis, wherein the outermost chief ray passes the objective through the optical axis proximate the aperture plane at a maximum angle to the optical axis, striking an edge of an image field in the image plane, and starting from an edge of an object field in the object plane, the edge of the object field being optically conjugated to the edge of the image field, and wherein the marginal ray limits a central ray bundle starting on the optical axis and limited by the aperture stop, and whose chief ray passes along the optical axis, and wherein the lens portion proximate the image plane comprises a collecting lens and a diverging lens, and the REMA objective has a total of no more than 10 lenses with a combined total of no more than five aspheric lens surfaces, and each of the condenser portion, the intermediate portion and the lens portion proximate the image plane containing one or two aspheric lens surfaces.

64. (New) A REMA objective for imaging an object plane onto an image plane, comprising: an aperture stop in an aperture plane, a condenser portion, an intermediate portion, and a lens portion proximate the image plane, wherein all portions are centrically arranged with respect to an optical axis of the REMA objective, and the lens portion proximate the image plane is arranged in a

region along the optical axis in which for a selected position along the optical axis, an absolute distance of an outermost chief ray to the optical axis exceeds an absolute distance of the marginal ray to the optical axis, wherein the outermost chief ray passes the objective through the optical axis proximate the aperture plane at a maximum angle to the optical axis, striking an edge of an image field in the image plane, and starting from an edge of an object field in the object plane, the edge of the object field being optically conjugated to the edge of the image field, and wherein the marginal ray limits a central ray bundle starting on the optical axis and limited by the aperture stop, and whose chief ray passes along the optical axis, and wherein the lens portion proximate the image plane is formed of a single lens with two aspheric lens surfaces, and wherein the REMA objective has a total of no more than 10 lenses with a combined total of no more than five aspheric lens surfaces, and the condenser portion and the intermediate portion contain one to two aspheric lens surfaces.

65. (New) A REMA objective for imaging an object plane onto an image plane, comprising: a condenser portion, an intermediate portion, and a lens portion proximate the image plane, wherein the REMA objective has a total of no more than 10 lenses with a combined total of no more than five aspheric lens surfaces, each of the condenser portion, the intermediate portion and the lens portion proximate the image plane containing one to two aspheric lens surfaces and being formed of a collecting lens and a divergent lens.